

**WHAT IS CLAIMED IS:**

1. An optical transmission equipment which transmits an amplified optical data signal and an optical surveillance signal, comprising:

    a doped fiber to which an optical data signal is input and which outputs said amplified optical data signal;

    a surveillance signal source which outputs said optical surveillance signal; and

    a coupler which multiplexes said amplified optical data signal and said optical surveillance signal;

    wherein a wavelength of the optical surveillance signal is an output of an amplification wavelength range of said doped fiber, and wherein the transmission loss of said optical surveillance signal in a transmission fiber is substantially the same as the transmission loss of said optical data signal in said transmission fiber.